

A Novel Cleaning Technology for Spacecraft Habitat, Phase I

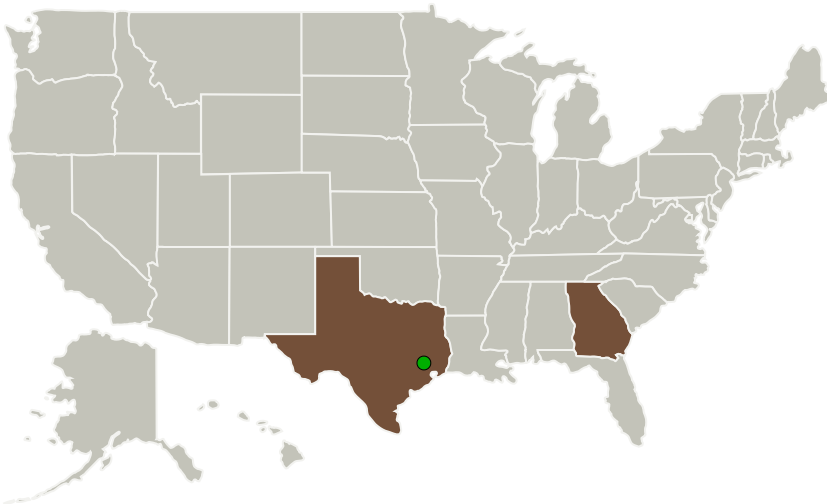
Completed Technology Project (2016 - 2016)



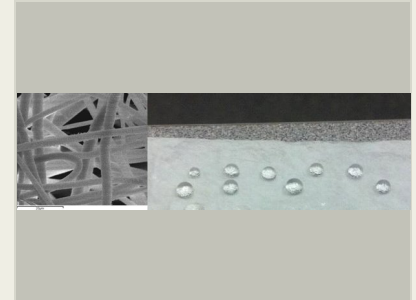
Project Introduction

There is currently no space based laundry technology. Traditional laundry uses a large amount of surfactants, which results in a substantial organic contaminant burden on downstream wastewater processors. Using cleaning wipes to clean crew contacted surface also generates solid wastes. In this project, based on its success on high performance superhydrophobic and antimicrobial coatings, nGimat proposes to develop a novel cleaning technology, which can be applied onto a wide range of crew contacted surfaces and fabrics. The proposed effort by nGimat will create functional surfaces via CCVD so that surfactants are no longer needed to clean and much less solid wastes will be generated. In the meanwhile, the technology will also provide a cleaning pad to collect and hold the cleaning water/solution and dust for easy recycling and regeneration of cleaning water in microgravity environment, which will significantly reduce resource and energy usage and improve comfortableness and safety of the space habitats.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
nGimat Co.	Lead Organization	Industry	Norcross, Georgia
 Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas



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Primary U.S. Work Locations

Georgia

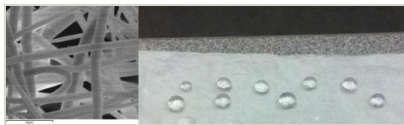
Texas

Project Transitions

**June 2016:** Project Start**December 2016:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/139651>)

Images

**Briefing Chart Image**

A Novel Cleaning Technology for Spacecraft Habitat, Phase I
(<https://techport.nasa.gov/image/131137>)

Water contact angle (°)	>160
Water rolling angle (°)	<10
Oleic acid contact angle (°)	>150
Oleic acid rolling angle (°)	>15
Cleaning behavior	>80% contaminants cleaned in Phase I

Final Summary Chart Image

A Novel Cleaning Technology for Spacecraft Habitat, Phase I Project Image
(<https://techport.nasa.gov/image/134835>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

nGimat Co.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

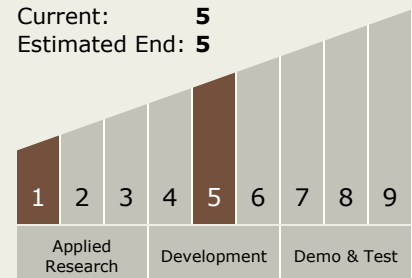
Carlos Torrez

Principal Investigator:

Yun Zhang

Technology Maturity (TRL)

Start: **1**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
 - └ TX06.1.4 Habitation Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System